

CLAIMS

What is claimed is:

- 5 1. A method for processing a network manager command in a communication network, the method comprises the steps of:

generating, by a network manager, the network manager
command regarding a link between a first port and a second
10 port of the network;

providing, by the network manager, the network manager
command to an affiliated network element;

- 15 upon receiving the command, determining, by the affiliated network element, type of network manager command;

when the network manager command is establish the link:

- 20 determining, by the affiliated network element, a network path between the first port and the second port via at least one other network element to produce a determined network path;

generating, by the affiliated network element, a network element command to establish the link between the first and second ports based on the determined network path;

- 5 providing, by the affiliated network element, the network element command to a first network element of the at least one other network element;

- 10 determining, by the first network element, link element type of the first network element in the link based on the network element command; and

- 15 when the link element type of the first network element is a termination link element, allocating, by the first network element, resources of the first network element to support the link between the first and second ports.

2. The method of claim 1, wherein the generating a network manager command further comprises:

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generating the network manager command to include link criteria when the request includes link criteria, wherein the link criteria includes at least one of: quality of

service, transmission latencies, privacy, and link failure protection.

3. The method of claim 1 further comprises:

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allocating, by the affiliated network element, resources of the affiliated network element to the link between the first and second ports, wherein the affiliated network element supports the first port.

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4. The method of claim 3 further comprises:

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when the link element type of the first network element is a supporting link element, assigning, by the first network element, resources of the first network element to the link between the first and second ports;

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determining, by the first network element, a network path from the first network element to the second port via at least another network element to produce a second determined network path;

generating, by the first network element, a second network element command to establish the link between first network

element and the second port based on the second determined network path;

providing, by the first network element, the second network
5 element command to the at least another network element;

determining, by the at least another network element, link
element type of the at least another network element in the
link based on the second network element command;

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when the link element type of the at least another network
element is a termination link element, allocating, by the
at least another network element, resources to the link
between the first and second ports.

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5. The method of claim 4, wherein the assigning resources
further comprises:

reserving the resources upon receiving the network element

20 command when the resources are available; and

allocating the resources when an acknowledgement of
establishment of the link is received.

6. The method of claim 4, wherein the assigning resources further comprises:

allocating the resources upon receiving the network element
5 command.

7. The method of claim 1 further comprises:

providing, by the affiliated network element,

10 acknowledgement of establishment of the link to the network manager.

8. The method of claim 1, wherein the generating the network command further comprises at least one of:

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generating, by the network manager, a request for modifying the link between the first port and the second port; and

generating, by the network manager, a request for deleting

20 the link between the first port and the second port.

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9. A method for processing a network manager command in a communication network, the method comprises the steps of:

providing, by a network manager, a network manager command
5 regarding a link between a first port and a second port of the network to one of a plurality of network elements;

upon receiving the command, determining, by the one of the plurality of network elements, type of network manager

10 command;

when the network manager command is establish the link:

processing, by the plurality of network elements, the
15 network manager command, wherein the plurality of network elements is associated with the link between the first port and the second port;

providing, by the one of the plurality of network elements,
20 acknowledgement of processing the network manager command to the network manager; and

receiving, by the network manager, the acknowledgement.

10. The method of claim 9 further comprises:

determining, by the network manager, link criteria to
include at least one of: quality of service, transmission
5 latencies, privacy, and link failure protection; and

generating, by the network manager, the network manager
command to include the link criteria.

10 11. The method of claim 9 further comprises:

enabling, by the network manager, usage of the link upon
receipt of the acknowledgement.

15 12. The method of claim 9, wherein the generating the
network command further comprises at least one of:

generating, by the network manager, a request for modifying
the link between the first port and the second port; and

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generating, by the network manager, a request for deleting
the link between the first port and the second port.

13. A method for processing a network manager command in a communication network, the method comprises the steps of:

generating, by a network manager, a network manager command
5 regarding a link between a first port and a second port of the network;

providing, by the network manager, the network manager command to an affiliated network element;

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upon receiving the command, determining, by the affiliated network element, whether the affiliated network element supports the first or the second port;

15 when the affiliated network element does not support the first or second port, identifying, by the affiliated network element, a network element that supports the first or the second port to produce an identified network element;

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relaying, by the affiliated network element, the network manager command to the identified network element;

upon receiving the command, determining, by the identified network element, type of network manager command;

when the network manager command is establish the link:

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determining, by the identified network element, a network path between the first port and the second port via a plurality of network elements based on the network manager command; and

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processing, by the plurality of network elements, the network manager command to establish the link between the first and second ports.

15 14. The method of claim 13 further comprises:

providing, by the identified network element, an acknowledgement of establishment of the link to the affiliated network element; and

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relaying, by the affiliated network element, the acknowledgement to the network manager.

15. The method of claim 13 further comprises:

determining, by the network manager, link criteria to include at least one of: quality of service, transmission latencies, privacy, and link failure protection; and

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generating, by the network manager, the network manager command to include the link criteria.

16. The method of claim 13, wherein the identifying the identified network element further comprises:

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accessing a look-up table to identify the identified network element based on identity of the first or second port.

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17. The method of claim 13, wherein the generating the network manager command further comprises:

including in the network manager command identity of the identified network element supporting the first or second port.

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18. The method of claim 17, wherein the identifying the identified network element further comprises:

interpreting the network manager command to identify the identified network element supporting the first or the second port.

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generating, by the network manager, a request for modifying the link between the first port and the second port; and

generating, by the network manager, a request for deleting the link between the first port and the second port.

- 5 22. The method of claim 19, wherein the generating a network manager command further comprises:

including in the network manager command identity of a network element supporting the first or second port.

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23. An apparatus for establishing a link in a network, the apparatus comprises:

processing module; and

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memory operably coupled to the processing module, wherein the memory includes operational instructions that cause the processing module to:

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generate, as a network manager, a network manager command regarding a link between a first port and a second port of the network;

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provide, as the network manager, the network manager command to an affiliated network element;

upon receiving the command, determine, as the affiliated network element, type of network manager command;

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when the type of network manager command is establish the link:

determine, as the affiliated network element, a network path between the first port and the second port via at least one other network element to produce a determined network path;

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generate, as the affiliated network element, a network element command to establish the link between the first and second ports based on the determined network path;

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provide, as the affiliated network element, the network element command to a first network element of the at least one other network element;

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determine, as the first network element, link element type of the first network element in the link based on the network element command; and

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when the link element type of the first network element is a termination link element, allocate, as the first network element, resources of the first network element to support the link between the first and second ports.

24. The apparatus of claim 23, wherein the memory further comprises operational instructions that cause the processing module to generate the network manager command by:

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generating the network manager command to include link criteria when the request includes link criteria, wherein the link criteria includes at least one of: quality of service, transmission latencies, privacy, and link failure protection.

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25. The apparatus of claim 23, wherein the memory further comprises operational instructions that cause the processing module to:

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allocate, as the affiliated network element, resources of the affiliated network element to the link between the first and second ports, wherein the affiliated network element supports the first port.

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26. The apparatus of claim 25, wherein the memory further comprises operational instructions that cause the processing module to:

when the link element type of the first network element is a supporting link element, assign, as the first network element, resources of the first network element to the link between the first and second ports;

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determine, as the first network element, a network path from the first network element to the second port via at least another network element to produce a second determined network path;

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generate, as the first network element, a second network element command to establish the link between first network element and the second port based on the second determined network path;

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provide, as the first network element, the second network element command to the at least another network element;

determine, as the at least another network element, link element type of the at least another network element in the link based on the second network element command;

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when the link element type of the at least another network element is a termination link element, allocate, as the at

provide, as the affiliated network element, acknowledgement of establishment of the link to the network manager.

30. The apparatus of claim 23, wherein the memory further
5 comprises operational instructions that cause the
processing module to generate the network command by at
least one of:

generate, as the network manager, a request for modifying
10 the link between the first port and the second port; and
generating, as the network manager, a request for deleting
the link between the first port and the second port.

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least another network element, resources to the link
between the first and second ports.

27. The apparatus of claim 26, wherein the memory further
5 comprises operational instructions that cause the
processing module to assign resources by:

reserving the resources upon receiving the network element
command when the resources are available; and

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allocating the resources when an acknowledgement of
establishment of the link is received.

28. The apparatus of claim 26, wherein the memory further
15 comprises operational instructions that cause the
processing module to assign resources by:

allocating the resources upon receiving the network element
command.

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29. The apparatus of claim 23, wherein the memory further
comprises operational instructions that cause the
processing module to:

31. An apparatus for establishing a link in a network, the apparatus comprises:

processing module; and

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memory operably coupled to the processing module, wherein the memory includes operational instructions that cause the processing module to:

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provide, as a network manager, a network manager command regarding a link between a first port and a second port of the network to one of a plurality of network elements;

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determine, as the one of the plurality of network elements, type of network manager command;

when the type of network manager command is to establish the link:

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process, as the plurality of network elements, the network manager command, wherein the plurality of network elements is associated with the link between the first port and the second port;

provide, as the one of the plurality of network elements, acknowledgement of processing the network manager command to the network manager; and

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receive, as the network manager, the acknowledgement.

32. The apparatus of claim 31, wherein the memory further comprises operational instructions that cause the

10 processing module to:

determine, as the network manager, link criteria to include at least one of: quality of service, transmission latencies, privacy, and link failure protection; and

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generate, as the network manager, the network manager command to include the link criteria.

33. The apparatus of claim 31, wherein the memory further

20 comprises operational instructions that cause the

processing module to:

enable, as the network manager, usage of the link upon receipt of the acknowledgement.

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34. The apparatus of claim 31, wherein the memory further comprises operational instructions that cause the processing module to provide the network manager command by

5 at least one of:

generate, as the network manager, a request for modifying the link between the first port and the second port; and

10 generate, as the network manager, a request for deleting the link between the first port and the second port.

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35. An apparatus for establishing a link in a network, the apparatus comprises:

processing module; and

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memory operably coupled to the processing module, wherein the memory includes operational instructions that cause the processing module to:

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generate, as a network manager, a network manager command regarding a link between a first port and a second port of the network;

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provide, as the network manager, the network manager command to an affiliated network element;

upon receiving the command, determine, as the affiliated network element, whether the affiliated network element supports the first or the second port;

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when the affiliated network element does not support the first or second port, identify, as the affiliated network element, a network element that supports the

first or the second port to produce an identified network element;

5 relay, as the affiliated network element, the network manager command to the identified network element;

upon receiving the network manager command, determine, as the identified network element, type of the network manager command;

10 when the type of network manager command is establish the link:

determine, as the identified network element, a network path between the first port and the second port via a plurality of network elements based on the network manager command; and

process, as the plurality of network elements, the network manager command to establish the link between the first and second ports.

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36. The apparatus of claim 35, wherein the memory further comprises operational instructions that cause the processing module to:

5 provide, as the identified network element, an acknowledgement of establishment of the link to the affiliated network element; and

10 relay, as the affiliated network element, the acknowledgement to the network manager.

37. The apparatus of claim 35, wherein the memory further comprises operational instructions that cause the processing module to:

15 determine, as the network manager, link criteria to include at least one of: quality of service, transmission latencies, privacy, and link failure protection; and

20 generate, as the network manager, the network manager command to include the link criteria.

38. The apparatus of claim 35, wherein the memory further comprises operational instructions that cause the

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41. A network manager that establishes a link in a network, the network manager comprises:

processing module; and

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memory operably coupled to the processing module, wherein the memory includes operational instructions that cause the processing module to:

10 provide a network manager command regarding a link between a first port and a second port of the network to an affiliated network element; and

receive an acknowledgement of processing completion of

15 the network manager command from the affiliated network.

42. The network manager of claim 41, wherein the memory further comprises operational instructions that cause the

20 processing module to generate a network manager command by:

generate the network manager command to include link criteria when the request includes link criteria, wherein the link criteria includes at least one of: quality of

service, transmission latencies, privacy, and link failure protection.

43. The network manager of claim 41, wherein the memory
5 further comprises operational instructions that cause the processing module to generate a network manager command by at least one of:

generate, as the network manager, a request for modifying
10 the link between the first port and the second port; and

generate, as the network manager, a request for deleting the link between the first port and the second port.

15 44. The network manager of claim 41, wherein the memory further comprises operational instructions that cause the processing module to generate a network manager command by:

including in the network manager command identity of a
20 network element supporting the first or second port.

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